

In the Claims:

Claim 1. (Withdrawn) A method of generating adult stem cells comprising implanting at least one micro-organ derived from adult tissue in a mammal in a manner enabling migration of cells out of said at least one micro-organ, said cells being adult stem cells.

Claim 2. (Withdrawn) The method of claim 1, further comprising isolating said adult stem cells migrating out of said at least one micro-organ

Claim 3. (Withdrawn) The method of claim 2, wherein said adult stem cells are isolated from a biological fluid collected from said mammal.

Claim 4. (Withdrawn) The method of claim 1, wherein said at least one micro-organ is of dimensions selected such that cells positioned deepest within said at least one micro-organ are at least about 100 micrometers and not more than about 225 micrometers away from a nearest surface of said at least one micro-organ.

Claim 5. (Withdrawn) The method of claim 1, wherein said adult tissue is of a type selected from the group consisting of skin, kidney, lung, liver and bone marrow.

Claim 6. (Withdrawn) A method of inducing stem cells differentiation, the method comprising co-culturing isolated stem cells and at least one micro-organ, thereby inducing stem cells differentiation.

Claim 7. (Withdrawn) The method of claim 6, wherein said stem cells are adult stem cells.

Claim 8. (Withdrawn) The method of claim 6, wherein said stem cells are embryonic stem cells.

Claim 9. (Withdrawn) The method of claim 6, wherein said co-culturing is

effected in a serum-free medium.

Claim 10. (Withdrawn) The method of claim 6, wherein said at least one micro-organ is of dimensions selected such that cells positioned deepest within said at least one micro-organ are at least about 100 micrometers and not more than about 225 micrometers away from a nearest surface of said at least one micro-organ.

Claim 11. (Withdrawn) The method of claim 1, wherein said at least one micro-organ is derived from an adult tissue of a type selected from the group consisting of skin, kidney, lung, liver and bone marrow.

Claim 12. (Withdrawn) A method of inducing stem cells differentiation, the method comprising culturing isolated stem cells in micro-organ conditioned medium, thereby inducing stem cells differentiation.

Claim 13. (Withdrawn) The method of claim 12, wherein said stem cells are adult stem cells.

Claim 14. (Withdrawn) The method of claim 12, wherein said stem cells are embryonic stem cells.

Claim 15. (Withdrawn) The method of claim 12, wherein said micro-organ conditioned medium is serum-free medium.

Claim 16. (Withdrawn) The method of claim 12, wherein said at least one micro-organ is of dimensions selected such that cells positioned deepest within said at least one micro-organ are at least about 100 micrometers and not more than about 225 micrometers away from a nearest surface of said at least one micro-organ.

Claim 17. (Withdrawn) The method of claim 12, wherein said at least one micro-organ is derived from an adult tissue of a type selected from the group consisting of skin, kidney, lung, liver and bone marrow.

Claim 18. (Currently amended) A method of generating an artificial micro-organ comprising:

- (a) providing devitalized, acellular, tissue-derived three dimensional scaffold, said acellular three dimensional scaffold being of dimensions selected such that when populated with cells, said cells positionable deepest within said scaffold are at least about 100 micrometers and not more than about 225 micrometers away from said cells positioned at a nearest surface exposed to a source of gas and nutrients formed on said scaffold; and
- (b) seeding said acellular three dimensional scaffold with stem cells, progenitor cells or homologous differentiated cells, and
- (c) providing conditions for cell growth and proliferation.

Claim 19.(Cancelled)

Claim 20.(Currently amended) The method of claim 19 18, wherein said stem cells are adult stem cells.

Claim 21.(Currently amended) The method of claim 19 18, wherein said stem cells are embryonic stem cells.

Claim 22.(Currently amended) The method of claim 18, wherein said cells seeded on said acellular three dimensional scaffold are a mixed population of cells including stem cells, progenitor cells and homologous differentiated cells.

Claim 23.(Original) The method of claim 18, wherein said cells seeded on said acellular three dimensional scaffold are genetically transformed to express at least one exogenous polypeptide.

Claim 24.(Currently amended) The method of claim 19 18, wherein said stem cells are genetically transformed to express at least one exogenous

polypeptide.

Claim 25.(Currently amended) The method of claim 18, further comprising the step of generating said acellular three dimensional scaffold from a tissue-derived micro-organ.

Claim 26.(Currently amended) The method of claim 25, wherein said step of generating is effected by subjecting said tissue-derived micro-organ to conditions selected suitable for removing cells and not acellular matrix from said micro-organ.

Claim 27.(Original) The method of claim 25, wherein said micro-organ is derived from an adult tissue of a type selected from the group consisting of skin, lung, kidney, liver and bone marrow.

Claim 28.(Currently amended) The method of claim 25, wherein said progenitor cells are homologous progenitor cells derived from the same source as said micro-organ .

Claim 29. (Withdrawn) A method of isolating adult stem cells comprising culturing at least one micro-organ derived from an adult tissue in a culture and isolating cells migrating out of said at least one micro-organ, said cells being adult stem cells.

Claim 30. (Withdrawn) The method of claim 29, wherein said culturing is effected under conditions suitable for maintaining said cells migrating out of said at least one micro-organ in an undifferentiated state.

Claim 31. (Withdrawn) The method of claim 29, wherein said culturing is effected under conditions suitable for propagation of said cells migrating out of said at least one micro-organ.

Claim 32. (Withdrawn) The method of claim 29, wherein said at least one micro-organ is of dimensions selected such that cells positioned deepest within said at least one micro-organ are at least about 100 micrometers and not more than about 225 micrometers away from a nearest surface of said at least one micro-organ.

Claim 33. (Withdrawn) The method of claim 29, wherein said adult tissue is of a type selected from the group consisting of skin, kidney, liver, lung and bone marrow.